Exclusive: how NSF is scouring research grants for violations of Trump's orders

The US National Science Foundation has unfrozen grant funding, but it continues to scrutinize research projects, sowing turmoil.

By Dan Garisto & Max Kozlov

The National Science Foundation, headquartered in Alexandria, Virginia, funds about 25% of basic US academic research. Credit: JHVEPhoto/Alamy

The US National Science Foundation (NSF), a major funder of basic academic research, announced yesterday that it has reopened a website that distributes money from research grants to scientists. The move comes after a week of confusion and frustration for NSF-funded researchers in which the agency froze their funding — including for postdoctoral fellowships — and said it was reviewing grants worth billions of dollars to comply with President Donald Trump's directives to terminate funding for diversity, equity and inclusion (DEI) efforts and to scrub all federal resources of these terms.

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Although the funds have been unfrozen after a federal judge issued an order blocking the US government from freezing grant money, the NSF has said it will continue its review.

This whiplash shows that the "United States is not a stable place to be a scientist", says Julia Barnes, an NSF-funded cultural anthropologist at the University of Tennessee, Knoxville. "Scientists funded by the NSF aren't paid a lot, but we care a lot about the research we do."

To better understand what is happening inside the NSF and what the future might hold, *Nature* spoke to six NSF staff members, who were granted anonymity because they were not authorized to speak with the press. All expressed strong concerns about recent agency decisions, especially to freeze funds.

"People are trying to understand what's going on," says one NSF employee. "The freeze in funding was, and continues to be, completely confusing to everyone."

An NSF spokesperson declined to comment about the agency's actions and instead pointed *Nature* to information on the NSF website about its implementation of

Trump's executive orders.

A week of whiplash

In the first hours of his presidency, Trump signed a barrage of executive orders, which are decrees that direct the US government's actions but that cannot change existing laws. The orders aimed to reshape US policy on climate science, public health, the federal workforce and more. A week later, the Trump administration issued a memorandum freezing all federal grants. That memo, set to take effect on 28 January, was temporarily blocked by a federal judge, and the White House then rescinded it. But White House press secretary Karoline Leavitt posted on the social-media platform X that Trump's executive orders on federal funding would "remain in full force". In response, the NSF froze its funds and cancelled a week's worth of grant reviews, which are used to determine which projects are funded.

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To more permanently halt the funding freeze, 22 states and the District of Columbia sued the federal government and its agencies. Two federal judges have since temporarily blocked the funding freeze, hinting that it might be an overreach from the governmentthat lacks proper authority.

There is no clear timeline for how long the judges' temporary holds will last, but even if they are lifted in an appeal, the NSF could have a hard time legally terminating grants, because their funds are appropriated by the US Congress, meaning they are protected by law, says Deborah Pearlstein, a specialist in law and public policy at Princeton University in New Jersey.

There is another area in which the NSF's actions might butt up against the law. Since 1980, Congress has mandated that the agency should seek to broaden participation

of people from under-represented groups, including women, in science, technology, engineering and mathematics (STEM) fields. "The orders are illegal," says an NSF employee. "The statutory framework of NSF is being violated."

The NSF spokesperson did not respond to a query about concerns that Trump's executive orders are at odds with the agency's responsibilities, as codified in law.

Inside grant review

The NSF has not publicly shared details of how it is continuing to examine research grants and flag those in violation of Trump's orders, but NSF employees shared documents with *Nature* clarifying the process.

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Around 10,000 research grants have been flagged for review and distributed to various programme directors. Grants in one area of science are being distributed to directors in a separate area of science. For instance, the geosciences division is examining grants from the division of social, behavioural and economic sciences. Each grant is being reviewed independently by two staff members who have been instructed to indicate any potential violations of Trump's orders. They will submit their reviews in a spreadsheet by 5 p.m. today.

Nature has seen the criteria for flagging grants, which call for programme officers to look for "broadening participation" language, foreign assistance, climate science, domestic energy and "discriminatory programs, including illegal DEI".

"To see 'women' and 'woman' and 'people of colour' showing up on a spreadsheet over and over and over and over — that was a gut punch," says one NSF employee.

Action for grants that are deemed to violate Trump's orders can include cancelling, archiving or modifying them, with a deadline of 7 February. A team of five to eight NSF staff members will then review any revised grants, which will go to the Office of the Director for approval.

"We already reviewed all of these," says one NSF employee, referring to the fact that grant proposals go through extensive vetting before being funded. "It's really frightening and ridiculous." Another employee shares those concerns but says that faced with Trump's orders, the "NSF is doing an honest job, as painful as it can be".

Science interrupted

The funding uncertainty has left NSF-funded scientists confused as to whether they can continue their research and whether the agency will honour its existing grants.

Jasmin Graham, a marine biologist who co-founded the science-advocacy group Minorities in Shark Sciences, says that NSF funds, which account for one-tenth of the group's operating budget, have yet to thaw. "We are currently operating on the assumption we will not get the remaining funds," Graham says, "and are strategizing to find alternative funding sources."

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Last week, more than 100 postdoctoral fellows who receive their salaries directly from the agency were locked out of the payment system, leaving them wondering how they would make ends meet. Although the system is now back online, postdocs who spoke to *Nature* say that they are still concerned about how they might be impacted by the ongoing funding review. "Funding was abruptly cut and reluctantly restored," a postdoc who requested anonymity out of fear of retribution told *Nature*. "Why should I think it's here to stay?"

The agency has not articulated to researchers how it is vetting grants beyond a smattering of "cryptic communiqués", Barnes says. Because all NSF grant applications are mandated by the US Congress to describe their "broader impacts" on society, which includes a plan to increase the participation of women and people from under-represented groups in science, researchers are worried that any award could be on the chopping block.

"NSF requires us to design these projects to be impactful to the highest number of people possible," Barnes says. "That's our duty as scientists funded by public taxpayer dollars."

Some scientists say they see opportunity in the uproar. "Broadening participation in STEM goes beyond racial, ethnic, gender identity — it goes to ensuring all the talented minds out there have the opportunity to contribute to our STEM workforce", including those from rural, poor areas, says Suzanne Barbour, a biochemist at Duke University in Durham, North Carolina, who chairs a panel that advises the NSF on how to encourage the participation of under-represented groups in STEM. "Hopefully this conversation turns into action that results in investments in STEM education."

Others are worried about how delaying research grants can be especially damaging for early-career researchers. "Grants don't just generate knowledge or output now," says Wei Yang Tham, an economist at the University of Toronto in Canada who studies the phenomenon. "They've become a way that we support the training of future scientists."

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